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ABSTRACT

This practicum addressed the problem of providing practical computer application experiences to fifth grade students as they relate to real life work situations. The primary goal was to have students become cognizant of computer functions within the work setting as contrasted with viewing computer activities as instruments used for games or academic drill. Two hundred and seventy students in six schools participated in the practicum implementation. They performed work-related activities on computers in the career areas of cashier, teacher, secretary, receptionist, fingerprint technician, and restaurant manager. A survey identifying jobs and computer processes was given as a pre- and posttest. Responses were elicited from students to an open-ended questionnaire concerning computers upon completion of the activities provided in the practicum. The results were positive; 267 students completed four or more computer activities used in the implementation and 259 students showed improvement in the recognition of jobs and computer processes. The open-ended questionnaire reflected positive attitudes toward computers on behalf of the total group. All objectives of the practicum were successfully met and the final results exceeded the anticipated practicum goals. (16 references) (Author/GL)

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Providing Practical Applications of
Computer Technology for
Fifth Grade Students in
Career Awareness Laboratories

by

Joan S. Pereno

Cluster XXV

A Practicum II Report Presented to the Ed.D. Program
in Early and Middle Childhood
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Education

NOVA UNIVERSITY

1989

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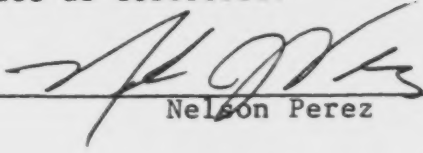
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PRACTICUM APPROVAL SHEET

This practicum took place as described.

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This practicum report was submitted by Joan S. Pereno under the direction of the advisor listed below. It was submitted to the Ed.D. Program in Early and Middle Childhood and approved in partial fulfillment of the requirements for the degree of Doctor of Education at Nova University.

Approved:

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Date of Final Approval of
Report

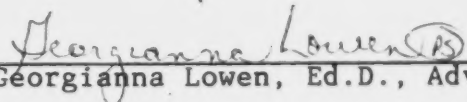

Georgianna Lowen, Ed.D., Advisor

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ABSTRACT

Providing Practical Applications of Computer Technology for Fifth Grade Students in Career Awareness Laboratories. Pereno, Joan S., 1989 Practicum Report, Nova University Ed.D. Program in Early and Middle Childhood. Descriptors: Computer Simulations/Drills (Practice)/Instructional Design/Learning Strategies/Student Motivation/Student Computer Participation/Symbolic Learning.

This practicum addressed the problem of providing practical computer application experiences to fifth grade students as they relate to real life work situations. The primary goal was to have students become cognizant of computer functions within the work setting as contrasted with viewing computer activities as instruments used for games or academic drill.

Two hundred and seventy students in six schools participated in the practicum implementation. They performed work related activities on computers in the careers areas of (a) cashier, (b) teacher, (c) secretary, (d) receptionist, (e) fingerprint technician, and (f) restaurant manager. A survey identifying jobs and computer processes was given as a pre and post test. Responses were elicited from students to an open-ended questionnaire concerning computers upon completion of the activities provided in this practicum.

The results of the practicum were positive. Two hundred and sixty seven students completed four or more computer activities used in the implementation. Two hundred and fifty nine students showed improvement in the recognition of jobs and computer processes. The open-ended questionnaire reflected positive attitudes toward computers on behalf of the total group. All the objectives of the practicum were successfully met and the final results exceeded the anticipated practicum goals.

CHAPTER I

INTRODUCTION

Description of Community

The setting for the practicum titled Providing Practical Applications of Computer Technology for Fifth Grade Students in Career Awareness Laboratories was the career awareness laboratories located in six elementary schools in the district. These schools are located in three separate incorporated areas and are part of a large metropolitan area which has a population exceeding a million and a half people. Two schools in each of these three areas are identified for the implementation of the practicum. Schools #1 and #2 are referred to as group A; schools #3 and #4 as group B; and schools #5 and #6 as group C.

Group A schools are situated in the North District of the Public School System. The incorporated area in which they are located has a population of approximately 62,000 people. The families were, for the most part, blue collar workers. Many families of the students were on welfare. The majority of the population is in the middle to low income bracket. Thirty percent of the students were White non-Hispanic, 56% were Black non-Hispanic, 13% were Hispanic, and 1% was identified as Asian/American Indian. A combined total in the two schools of 60% of the students were on the free lunch program. The counselors in the Group A confirmed there were many students who were "latch-key" children.

The student population of the two schools totaled 1,400.

Group B schools are located in the center of the business district of an incorporated area with a population of approximately 39,000. The schools are in the North Central District of the Public School System with a combined population of 1,900 students. The majority of families were of middle income status. Many Hispanics chose to settle in this area when they immigrated to the United States. They have been industrious and now work in and operate many of their own small businesses. Student population reflected an ethnic breakdown of approximately 17% White non-Hispanic, 3% Black non-Hispanic, 79% Hispanic, and 1% Asian/American Indian.

Group C schools are located in a primarily rural area. They are in the South District of the Public School System. The school populations total nearly 1,100 students. The number of residents in the community is close to 15,000. Many migrants are in the area and this caused the students population to fluctuate during the year. The families were economically in the low to middle income category. There are numerous small farms near the schools. Student population was comprised of 63% White non-Hispanic, 12% Black non-Hispanic, 25% Hispanic, and 1% Asian/American Indian.

Individuals involved in the practicum process were the six principals of the respective schools who gave their consent for the implementation to take place in their career

awareness laboratories, 15 students in each of the six career awareness laboratories, six teachers and six aides in each laboratory, and the practicum facilitator. In addition, an elementary teacher with career laboratory experience and computer expertise provided technical assistance and advice for the facilitator in the preparation of the diskettes which were designed by the writer and used in the practicum implementation.

Writer's Role and Responsibility

The writer's role was that of designing software and student worksheets relating to six career stations which the teachers and students used in the implementation process. It was the responsibility of the writer to introduce and, where necessary, provide instruction for the teachers in the use of the computer software. The facilitator administered the evaluation tools where appropriate. It was also the responsibility of the writer to oversee and monitor the progress of the practicum implementation.

As an educational specialist, the writer is in charge of the Career Awareness Laboratory Program for the Department of Career Education in one of the largest school districts in the nation. At the present time there are 62 career laboratories in operation, 12 of these laboratories were added in September of 1989. Forty-four are at the elementary level; 13 are provided at middle school for exceptional students (ESE);

three are mobile career laboratories which visit two elementary schools each every year; one serves the severely emotionally disturbed (SED) students in a secondary facility. Nearly 6,700 students districtwide receive the career awareness laboratory opportunity.

The responsibilities of the educational specialist is many faceted. She provides for the training of all personnel including instructing specific classroom management techniques appropriate for a laboratory setting, and for monitoring the program to see that the quality of the program is maintained. Each year summer writers are hired to write new and exciting materials for the laboratory. It is her responsibility to locate the writers, present them with the ideas they must develop, and make sure the materials are printed for distribution in time for the opening of school. As the program expands, the specialist orders supplies for all new laboratory facilities. Once the laboratory equipment and supplies arrive, the educational specialist organizes the physical arrangement of the laboratories. When necessary, the specialist works with the Capital Improvement Force of the Public School System in planning and designing necessary physical renovations for the laboratories to function successfully. Another responsibility is that of making presentations at educational meetings, conventions, and business community meetings for the purpose of helping the program expand in the county and throughout the state

and country. A major responsibility is to maintain close contact with the business community in obtaining their support as sponsors of the program. Again this year, through such contact, \$22,500 was contributed from a local Chamber of Commerce which aided in the opening of new career laboratories. Project COMET (Career Opportunities Motivated through Educational Technology), one of the career awareness laboratory models designed as a dropout prevention program, has been sold and implemented in another county of the state. Two Project VICTORY (Vocational Instruction Community Training Opportunity for Youth) laboratories for ESE students have been sold to still another county in the state. A third county purchased a regular career laboratory for mainstream students in the 4th, 5th, and 6th grades. Even as this report is being written, negotiations are underway for the sale and expansion of the Career Awareness Laboratory Programs in and out of the state.

CHAPTER II

STUDY OF THE PROBLEM

Problem Description

In 1987, the Department of Career Education, at the district level, began a new component for the Career Awareness Laboratory Program. Maximum class size in the laboratory is held at 15. This component was the operation of a computer station in each laboratory. Students are now able to experience the laboratory instruction in two phases. Phase I involves working at career stations in performing "hands-on" activities related to a particular career. For example, students learn about nursing as a career and then as a final experience are given the opportunity of weighing patients (students) and measuring the height of numerous patients (students) on a hospital scale. Before the lab students proceed to a new career station, they begin Phase II, which involves working at the computer using software correlated to the health career cluster. Students work with software called "Body Transparent." Although valuable information about the body is provided through its use, it does not involve the students in practical application of the computer as it is used in the world of work.

Computer technology is rapidly increasing in every field of endeavor. Generally speaking, students have not been exposed to participating in the practical application

of computer use, and, as a result, they have little understanding or appreciation for the actual varieties of computer functions. Although students must pass the state Minimum Student Performance Standards for Schools in Computer Literacy, there are no requirements in these standards that students must experience using computers in practical applications. Basically, the child's exposure to computers incorporates his/her use as a means for skill remediation or games. The majority of students have not experienced the opportunity of using computer technology as it is used in business and industry. They are not fully aware of what an integral part of the work setting computers have become. Without experiencing the practical functions, many students do not become motivated to learn computer literacy skills. The Supervisor of Computer Education and Technology in the district expressed the opinion that children who do not see computers as practical tools do not retain computer literacy skills (see Appendix A).

The ideal situation would have been to have familiarized students with computer activities through their own "hands-on" experiences which relate to real job applications. Not only would they have been able to master the minimal standards for computer literacy, but they would also have developed a true understanding and appreciation for the value of the computer in our working society.

The research indicated student academic performance

improves through the use of practical computer applications.

The problem addressed by the practicum was that students did not know how to make practical career applications of the computer as related to real life situations.

Problem Documentation

The documentation data substantiating that this problem existed is provided in Appendices A, B, and C.

When the idea for adding the Phase II component to the Career Awareness Laboratory Program developed, the supervisor of computer literacy for the school districts was contacted. She wrote a letter to the Director of Career Education expressing her views. Appendix A contains her correspondence outlining her concerns regarding computer education and that the students in the career laboratories need to experience practical applications of computer technology as part of their career education training.

Appendix B contains an excerpt from the state Minimum Student Performance Standards for Schools in Computer Literacy and was made available through the County Computer Education Supervisor. None of the minimum standards incorporate student performance on the computer as a means for demonstrating to the student the practical application of computers as they relate to the world of work. Software has been purchased for use in the career laboratories. Although the activities

are related to information within a career cluster, the student is not exposed to using the computer technology as it would be used on the job. Appendix C lists the computer software currently used in the laboratories. This list was made available through the Department of Career Education.

The documentation provided in this proposal created the impetus for further investigation.

Causative Analysis

Close examination of the problem revealed many factors as contributing causes for students not being informed as to the practical computer technology functions.

One had only to visit school after school to see firsthand that students were using the computer in game oriented activities. Although this provided the student with the opportunity of going through the process of using software, the students' experiences were totally unrelated to the technical computer technology applications which apply to life in the work related area.

The computer is a fantastic instrument for holding the attention span of the child. It has proven itself extremely valuable in improving the basic skills through drill. It doesn't scream at the child when an incorrect answer is given nor does it in any way lose its patience. Using the computer for drill on basic skills does have its place in the elementary educational system. The pathetic side to

these positive observations is that the student did not have the opportunity of using the computer in a practical "real world" application way. Perhaps students would grasp many basics more readily if their activities related closely to actual computer applications.

The commercial market has capitalized on interesting software which incorporated as its focus career related information. Although the information produced in the software which had been made available for the career awareness laboratories was important, interesting, and informative, it lacked the individual involvement of the student working at the computer in what could be considered a typical job related activity.

Students were trained in understanding the functions of the basic parts of a computer. They were taught to understand the role and function of software and language in computer technology. They were encouraged to understand the process of programming and to recognize the impact of computer technology in society and the need for its ethical use. The link in the chain which was missing was that of providing the student with the experience of manipulating the computer, using computer technology in a practical application and meaningful way. Such experience would give true appreciation and understanding as to computer importance in everyday life.

The Department of Career Education should have been

a major participant in the selection of computer software. Each educational division of every school system has definite priorities. Certainly, the Department of Career Education would be an asset in providing input during the selection process for appropriate software which would have attributed to closing this computer education gap.

The Related Literature

In reviewing the literature, several sources of software and methods for introducing computer technology in real work situations came to light.

The literature identified software which can be used by students in the activities by using commercial or premade databases. They bypass the boring and tedious task of setting up a database and entering information. Rathje (1987) reviewed software and found that Bank Street School Filer teaches students how to set up their word categories which requires them to make information classifications in various ways. This is undoubtedly a beneficial experience but the child should learn, even on a small scale, how to set up his/her own database.

Adams (1988) recognized the need to involve students in computer activities in a practical way. He had the students develop a class project creating a computerized ice cream delivery route. In order to establish routes for customer service, special schedules, and a means for billing

customers, a combination of computer technology was used. Students worked with the word processor, database and spreadsheet programs. Adams used the Apple Works tool software program and Apple IIe computer with two disk drives and a printer. Students learned about various jobs, i.e., route manager, bookkeeper, dispatcher, or navigator. The teacher who was the computer teacher for the Princeton Regional Schools in Princeton, New Jersey, set up the data base and students completed the data record for their imaginary ice cream stores. Using a spreadsheet, the bookkeeper prepared bills by transferring the spreadsheet data line by line into a word processing document to create and print out bills for each store.

Educational simulations can be very effective teaching tools. However, finding simulations to meet certain instructional needs can be difficult. Vargas (1986) was interested in experiences which would elicit meaningful actions on the part of students, encouraging the development of appropriate responses. The potency of the simulations depends upon incorporating practical effects. Simulations are only of quality when they represent actual conditions in the real world. Students should be involved in making decisions which mirror or resemble true conditions. It is important for the designer of a simulation to specify precisely the rules which produce the outcomes. It should be noted that the effectiveness of programs which focus

on drill and practice are built around the student providing correct responses which stimulate the eagerness on the part of the student to continue. Simulations can be frustrating for the student at first because they are not constructed in small sequenced tasks. With teacher guidance and planning, simulations can become very effective teaching tools.

A valuable tool for teaching students concerning money is the spreadsheet. Rather than having the students use pencil and paper with solving a math problem Dickinson (1985) had his fifth grade class use the computer for their responses. Students used a spreadsheet to work out their calculations. Numbers were presented in organized tables which helped the user draw conclusions about mathematical data. Through the use of spreadsheets students were able to present various types of money centered experiences. Students were engaged in such activities as predicting the earnings of a worker as the charge for specific services was manipulated, or learning that profits are effected by such things as cost for packaging and price for selling the item. Spreadsheets are relatively simple to operate. Dickinson has used this software with fourth, fifth, and sixth graders without any difficulties. The spreadsheet was introduced with a group lesson, followed by group and individual demonstrations and concluded with a single child or a team of two children completing prescribed activities found on a task card. The instructor discovered that students

were eager to learn more about money and business once they began using this technique. These activities correlated directly to actual computer use in the world of work.

Learning written communication skills is for most elementary students dull and uninteresting, even though a necessary part of the curriculum. Incorporating the use of a word processor and task cards, students improved their letter writing skills appreciably. In order that this method be successful, specific computer processing commands must be learned and understood. Prior to beginning, students should be sure they understand the techniques of retrieving information and saving materials on a data diskette. Through proper use of the word processor, students are able to relate to the practical use of the processor and the way in which it is used on the job. Writing skills improved dramatically through providing practical experiences on the word processor (Boudrot, 1983).

McBride and Glasthal (1986) developed a program for teaching geography to students using the computer. They organized a computerized travel agency setting up a data file listing information on 20 countries. Students retrieved the information from the database to help plan trips for their pretend customers. As an added attraction to the activity, students became informed about the geography and points of interest related to many foreign countries. The program unit was correlated for use with Scholastic

PFS file database program. Students used a data file setting up a data record for each country. As information was gathered, students learned that a travel agent must be able to quote prices for such things as hotel rooms, and provide information pertaining to flights. They also must provide information concerning the ideal time for visiting a specific country and the points of interest to include on their itinerary. Pupils were informed that if they as travel agents could not supply a great deal of information about the countries, they might lose the customer who would call an airline for information. Customers were provided with play money and the student travel agents performed computer technology skills in providing customers with tickets to various countries. Practical application of computers was truly incorporated in this experience.

Reading and writing skills are enhanced when connected to classroom applications of the computer. It is possible to present software which holds the attention of the reader while emphasizing the way something was written, rather than what was written. Many times teachers wish to show students a relationship between reading and writing. This can be accomplished through the technique of having students work as either a forger or a detective. The forger must place a sentence in a paragraph in such a way that it appears to be a part of the original paragraph. The detective has the responsibility of correctly identifying the forged sentence.

Anderson-Inman (1987) stated the software which provides interactive reading and writing experiences brings the students closer to recognizing the computer's capacity for demonstrating the unique relationship between the two activities. She further pointed out that the practical application of computer technology can have true value when used in real life situations.

Roblyer (1988) reviewed the effectiveness of microcomputers in education from 1980 through 1987. His findings reflected that using the computer through real life applications produced higher effects in some science studies while the least effect was in the reading skills area. The use of the word processor made students feel encouraged toward writing which stimulated their desire to write more.

A computerized mini-city was presented by Rotenberg (1985) where 10 year olds were involved in the operation of simulated businesses comparable to those in actual cities. The project was called Exchange City and was located in Kansas City, Missouri. Thousands of children in the fifth grade from numerous districts visited the mini-town. Children applied for the jobs in the city and interviewed before visiting Exchange City. The bank in Exchange City integrated computers into its daily business operations. Students operated computers in the bank, permitted customers to make deposits and withdrawals. The bank personnel warned student customers when their accounts had insufficient

funds. A bank statement was printed at the end of the day. In the warehouse computers provided assistance in the recording of inventory. A simple computer accounting activity showed the students the store tabulations on goods sold.

Most children enjoy writing vivid descriptions. McBride and Glasthal (1986) used word processing task cards to initiate student creativity and imagination, necessary skills to develop in order to become a successful writer or journalist. Through the techniques taught on the word processor, the students were able to change their compositions through inserting or deleting words or phrases. Learning this computer application is appropriate in many careers today. Not only did the student feel motivated to complete the tasks, but their language skills improved appreciably.

This review of the literature brought into perspective the recognition that through many educational disciplines students recognize the benefits of their own experiences in being involved with using the computer as it is employed in the world of work. The computer is definitely here to stay and real life applications dictate this truth most graphically to young people.

CHAPTER III

ANTICIPATED OUTCOMES AND EVALUATION INSTRUMENTS

Statement of General Goal

The goal of the practicum was that students in the career awareness laboratory would be familiar with using computers in the manner in which they function in the world of work. Students would be able to grasp the practical applications of computers as used on a daily basis in business and industry.

Behavioral Expectations

An analysis of the literature indicated that giving students the opportunity of learning how computers are used in everyday life, heightens their interest and increases their understanding of the importance of this modern day technology. The practicum facilitator chose the first and second behavioral objectives to insure that students would be given the opportunity to experience working in a practical way at the computer. The third behavioral objective was intended to capsule for the student his/her understanding of appropriate computer use as it relates to a specific job. The fourth behavioral objective was designed as feedback to examine the impact the computer activities had on student attitudes toward computer use. Therefore, the following specific behavioral objectives were chosen for this practicum:

1. Over a period of nine months 10 students out of 15 in each of six laboratories will work at the computer station completing practical application computer activities for four specific careers.
2. Over a period of nine months 10 students out of 15 in each of six laboratories will complete the correlated activities as recorded for four careers using appropriate computer technology.
3. Over a period of nine months 10 students out of 15 in each of six laboratories will successfully identify computer jobs with computers as identified on a survey.
4. Over a period of nine months 10 students out of 15 in each of six laboratories will reflect in a positive manner concerning practical applications of computers in the world of work.

Evaluation Instruments

The evaluation instruments used for the practicum were to consist of student time cards, a computer activity checklist, a computer survey matching computer jobs with computer activities, and an open-ended questionnaire. Student time cards were to be used as a tool for evaluating the first objective. These time cards were to indicate the student's name and the date when the work was initiated at the computer station and were furnished through the Department of Career Education (see Appendix D).

The second objective was to be evaluated by the student presenting a copy of the computer printout to the teacher verifying that the activity had been completed. Upon completion, the student was to record the date on the "Computer Activity Checklist" which was designed by the writer (see Appendix E).

The third objective was to be evaluated by completing a survey, designed by the writer, identifying computer jobs with computer activities (see Appendix F).

The fourth objective was to be evaluated by involving the student in an open-ended questionnaire, designed by the writer, which was to reflect student attitudes toward computer usage (see Appendix G).

CHAPTER IV

SOLUTION STRATEGY

Discussion and Evaluation of Solution

The teaching of computer skills became an important focus at the elementary level. It was essential for students to learn how to use computers even in the most rudimentary ways. With the career laboratory experiences being made available in sixty-two schools in the district, an important consideration was to familiarize pupils with the practical applications provided by modern day technology in the world of work. It was one thing to have students identify the need for computers in the world, but to give children the opportunity of using computers in practical application exercises enabled the development of understanding computer importance as related to everyday life.

A review of the literature presented several considerations which were used as possible solutions to the problem. Benedict and Rochon (1987) believe it is important to involve students in representations of business. At the secondary level, students have become involved with being entrepreneurs. For students in vocational education, lab experiences provide the opportunity to operate computers as they function in the business world. The business cluster students became involved with providing a newsletter service to several service groups. Through their experiences of furnishing the necessary tasks for producing and mailing the newsletter, they became inspired

to develop their own credit union called "Checkout". Through the credit union, student received personal statements of their accounts. As the checkout team became more sophisticated they were able to create software for checking their bank balance on-line to avoid bouncing a check. They began to understand the use of the computer in their business cluster through practical application. Some activities geared to more simplified activities could be used with elementary students.

Today, computers are used in all kinds of businesses. Companies rely on them in order to maintain the flow of goods and services, for record keeping and for planning for the future. Several types of computer software were emphasized by Woods (1987). Using an electronic spreadsheet is almost an essential part of the business world today. This system provides an accurate method for calculating and recording important figures. Through the use of software designed for the word processor writing correspondence becomes varied in designing forms. This software enables business personnel to create graphs which visually chart profits, performance and anticipated future performances. He believed these three computer software types could show elementary students how basic skills are used to manage business in the real world. Woods worked with special education students who had instructional levels ranging from second through fifth grade. In order to teach a unit on the world of work,

Woods organized his lessons around the school's soda machine business. Students operated the business themselves.

In doing so, it was necessary for the students to become involved with such operations as checking inventory, collecting money for sales, and making payments to the distributors.

A spreadsheet was devised on which the data could be recorded.

Appleworks software was used to develop the desired columns.

Practical applications were used involving various forms of computation including estimating and even averaging.

What is impressive is that students not only see how computers are actually used in the business world, but they also understand more clearly why the basic skills are important in their lives.

All children love mystery and suspense. Working from this premise, Deardorff (1986) involved students in several word processing tasks which enabled them to improve their writing skills and at the same time develop an understanding of how computers are used in the criminal justice system. Students used a word processor to develop information about their mystery. The cards used identified the crime and setting, others included five witnesses with accounts of what they saw which might lead to solving the mystery. In addition, students also created five clues, five suspects, and a plot mix-up whereby the skill of sequencing in stories was highlighted. As a final task students developed their own plots for individual mystery stories. A word processor

is essential to complete each of these steps. Through the activity of writing mystery stories students realize there is a great deal of editing required before achieving a good composition and good writing techniques.

In an effort to combine computer and economics education, McKeever (1984) had elementary students investigate the impact of computer usage on a variety of segments of the economy. Computer technology effects the standard of living. Students examined the computer related jobs and the use of computers in the financial world as well as the role computers play in keeping track of supply and demand. Studies and involvement of this nature bring home to the student the impact the computer has in today's society.

The information provided by Wepner, Freeley, and Strickland (1987) gave support to the practicum implementation. The authors stressed the need for a change in computer awareness and in equity for female, minority, and poor students located at the neglected end of the scale. Equity and awareness are important ingredients in all career laboratory settings.

Wilsford (1989) selected Superintendent of the Year, Orangeburg, South Carolina, believes education must change if children are to get to the 21st century. In a changing world students have an obligation to work harder if they are to remain in the competitive computer age. Technology, according to Wilsford, is the key to this change. Restructuring education does not mean reducing teacher-pupil ratio. This

is not cost effective. Technology is the variable which is reducing dropouts and will continue to do so. Computers placed in classrooms can offer the student the opportunity of reaching beyond basic skills. It can be stated that the career awareness laboratories are part of the innovative curve which is calling for restructuring education. Computer experiences in career laboratories enables the student to develop such skills.

Description of Selected Solutions

The literature review prepared the writer to introduce several methods for familiarizing students with the practical applications of computer technology. Through these experiences students developed an increased interest in computer use.

Activities provided students the opportunity of using a spreadsheet. They became involved in the extrapolation of information from the spreadsheet, and in another activity they became involved with supplying input on the spreadsheet.

Students participated in the experience of using the word processor through practical application. They understood how it was used and actually performed two tasks which related to the world of work.

A third type of computer application experience provided for the students was that of using a database. Again, they actually performed two tasks on the computer using the database which directly related to a specific job task.

The computer activities, when completed, enabled the participant to correctly identify and correlate computer tasks with computer careers.

Computer activities relating to the world of work, in the career laboratory setting incorporated equal opportunity for all students in the program. Equity and awareness are important ingredients in all career laboratory settings.

Report of Action Taken

Prior to implementing the practicum, computer activities were designed by the writer which correlated to specific job functions students completed at work stations in laboratory "hands-on" experiences. Six careers were selected and the writing task began. An elementary school teacher with computer expertise was helpful in the screening process of choosing the computer programs which were used. She also provided technical assistance in the preparation of the data disketts by the writer. The programs used in the implementation were (a) MECC Writer word processor, (b) MECC Stuff and Fetch database, and (c) EduCalc spreadsheet. Two activities were written for each of these programs.

The success of the practicum implementation was contingent upon the cooperation of many individuals in six schools. Appointments were made with the principals at each location and the practicum implementation was discussed. During each of the meetings the entire proposed practicum including

the computer materials, checklists, and surveys, designed by the writer, was presented to the principals so they would understand and endorse the writer's request for using their school as a site for the practicum implementation. After hearing an explanation about the computer materials and how they correlated to laboratory work stations, the administrators eagerly granted approval of their students' participation.

Once permission for working in each school was obtained, the writer contacted the six laboratory teachers and aides for the purpose of explaining the practicum implementation. The responsibilities of the teacher and the aide were discussed. All of the information provided for the principals was also presented to the laboratory staff. Because this is an exciting and innovative approach for students to experience computer technology, and because using a practical application to learning is a major thread in the fabric of operating a career laboratory, teachers and aides willingly and enthusiastically embraced the opportunity of working with the project. The practicum implementation began in March and ended in November. One of the pleasant surprises was that rather than working with a total of 15 students in each school, the materials in the practicum were used with 45 students in each location. The first group of 15 students in each school used the computer activities from March to June. The second group of 15 students used the materials

for six weeks during the summer school session, from July to August, the third group of 15 students participate from September through November. A total of eight months was devoted to the practicum's implementation, excluding the time consumed in writing materials and making the necessary arrangements with administrators, teachers and aides at the various school locations. Working with the three time segments was a decided advantage because it afforded the opportunity of examining the results of the practicum materials of 270 students rather than the projected 90 students. The objectives remained the same for each group of 15 students in each of the three time periods.

Prior to using the computer technology activities provided in the practicum, the students in the six laboratories were administered a short survey to indicate their understanding of using the spreadsheet, word processor, and the database as they relate to real work situations (see appendix F). The writer administered the survey herself to students in four of the six schools.

Computer activities for students were provided which engaged them in the process of using spreadsheets. As a grocery store manager, the students worked with the spreadsheet in a simulated activity in which the shelf stock was counted and the supply on hand was entered in the computer. The student was involved in the process of checking the amount which was expected to be kept in stock, showing what was

actually on the shelf; and identifying those items to be ordered for the grocery store. At the conclusion of the computer task, the student printed out the activity as documentation that the exercise was successfully completed.

The writer observed a fifth grade student busily working at the computer performing the task of the grocery store manager. It was obvious the student was thoroughly enjoying the spreadsheet activity. One of the fascinations was that of watching the totals automatically change as she input new information concerning stock items on the store shelf. The student commented to the teacher that she never realized the store had all the extra work to do. It was her belief that the grocery only had cashiers and people to place things on shelves.

A second activity using a spreadsheet provided by the practicum, was that of the student working at the computer as a teacher. Here the teacher (student) entered the class record showing the days present, absent, and tardy for the nine-week grading period. Documentation of successfully completing the task was provided by making a printout of the new attendance record.

Two activities were incorporated into the practicum implementation using the word processor. When the student completed the "hands-on" requirements of the secretary in the laboratory, the responsibility then turned to that of writing a short business letter using the word processor.

One young student was in the midst of writing the business letter, as instructed in the activity package when the bell rang signifying the end of the school day. As the other children in the class filed out, he remained conscientiously using the word processor to complete the business letter. The teacher urged him to stop and prepare to go home. He responded, "I can't do that, this letter is very important and it must be finished first". She assured him the opportunity would be made available to complete the letter the following day. He reluctantly stopped, with a disappointed "Gee whiz, I was almost done".

When an employee (student) works as a waiter or waitress in the laboratory restaurant they set the table, take the order, serve chocolate drink and cookies to the customer, total the bill, and clean the work station when the customer (student) leaves. Following this activity the student worked as a restaurant manager changing prices on the menu through the use of the word processor. The new menu was then printed. Such experiences demonstrate in a graphic way that the word processor is valuable in very diverse careers.

A third type of computer application made available for the student requiring the use of the database. After working as a fingerprint technician at a lab station, the student went to the computer and found the computer related job was that of working in the police station. According

to the instructional package, a crime had been committed and the files had to be searched for information using the database in identifying possible suspects. A police line-up was to be organized and all persons with criminal records fitting the description given by the eye witness were to be contacted. Children enjoyed the mystery and suspense of this activity.

During the implementation, one of the teachers requested the location for the description of the crime be rearranged for clarity in the learning activity package. Students were looking too soon for information concerning the suspects as the instructions had originally been written. The writer genuinely appreciated the input, changes were made, and the sequences followed a smoother path.

An invitation was received to attend a Career Day at a school in Group B. Students involved in the practicum implementation presented a program to the entire school in the cafeteria. As each of the 15 students lined up on the stage they walked to the microphone one by one and spoke about their own aspirations and career goals. Five or six students spoke of things they were hoping to do someday and then --- a fifth grade boy announced that he wanted to work in the police station solving crimes. He said he had used the database on the computer in the career lab in searching for suspects to an imaginary crime and he felt he would be excellent in a job of this kind. Needless

to say, the writer was thrilled beyond words. This experience was like a little icing on the cake for the practicum implementation.

The student receptionist worked in the laboratory taking phone messages and completing orders for materials needed in the imaginary office. Upon completion the student moved to the computer and worked as a receptionist in the office of three dentists. The major responsibility was that of sending notification to patients concerning the next appointment for a six month check-up and cleaning. Through the use of the database, records were checked, the names of the patients due for their next dental appointment were obtained, and the receptionist, using this information was ready to send out notices. The student printed the records showing the patient's last visit and circled the names of those to be contacted.

Time cards were used to show activities of participation, and completion forms indicated when the task was finished. As a culminating activity, responses to an open-ended questionnaire were given by each student. The purpose of the questionnaire was designed to reflect student attitudes toward computer applications, either positive or negative. It was anticipated the responses would indicate to some degree the impact the practicum implementation had on individual attitudes concerning computer technology.

Examples of the computer technology instructional packets are provided in the appendices as follows: database

activities are found in Appendix H; copies of the word processor materials are located in Appendix I; and assignments using the spreadsheet are in Appendix J.

The principals, teachers, aides, and students were elated over the practical applications of computer technology provided through this practicum implementation. The most frequent comment heard was that similar activities should be written which correlate with the remaining laboratory "hands-on" career stations.

Chapter V

RESULTS, CONCLUSIONS, AND RECOMMENDATIONS

Results

Earlier in the practicum report, it was stipulated that the practicum implementation involved 270 students rather than the projected 90 students. The length of time the classes worked with the practicum materials was a total of eight months rather than nine. Even though the total number of students was increased and the number of months was slightly decreased, the results were overwhelmingly positive.

For the sake of clarity, the three time segments for the practicum implementation will be referred to as (a) Spring Session (March to Mid June), (b) Summer Session (July to Mid August), and (c) Fall Session (September through November).

The first specific objective, "over a period of nine months, ten students out of fifteen in each of six laboratories will work at the computer station completing practical application computer activities for four specific careers", was met successfully in the Spring, Summer, and Fall Sessions as indicated through the use of laboratory time cards.

Each time the student began a "hands-on" and computer activity, the career station was recorded on the time card as well as the date and time for initiating the specific computer job task (see Appendix D).

Table 1, summarizes the results of the Spring Session participation in using computer related activities as recorded on student time cards.

Table 1

Computer Activities Initiated Time Card Tabulations

SPRING SESSION			
Schools Group A	Total Enrollment	Students Participating	# of Stations Initiated per Student
#1	15	10	6
		3	5
		2	4
#2	15	15	6
Group B			
#1	15	15	6
#2	15	14	6
		1	3
Group C			
#1	15	12	6
		2	4
		1	5
#2	15	15	6

Group A school #1, Table 1 shows two students met the proposed first objective while 13 students surpassed the intended results. School #2 in the same group showed the total enrollment initiating all six of the hands on activities provided for in the practicum implementation.

Group B school #1, Table 1, indicated maximum performance with all 15 students initiating the six computer activities provided in the laboratory setting. School #2 almost had a perfect participation with 14 students initiating the computer activities.

Group C school #1, Table 1 showed 12 students initiated six stations each during the implementation period. Two students met the anticipated objective of working on four computer related activities while one student was involved with five computer tasks. Time cards in school #2 showed all 15 students were involved in each of the six computer activities provided for the practicum participants.

Table 2, summarizes the results of the Summer Session participation in computer related activities as recorded on student time cards.

Table 2

Computer Activities Initiated Time Card Tabulations

SUMMER SESSION			
Schools Group A	Total Enrollment	Students Participating	# of Stations Initiated per Student
#1	15	9 6	5 4
#2	15	11 3 1	5 4 6
Group B			
#1	15	7 3 5	6 5 4
#2	15	10 3 2	4 5 3
Group C			
#1	14	8 6	5 4
#2	15	15	4

The Summer Session lasted for a period of six weeks. The teachers and aides were eager to have all students experience working at the computer with the career focused materials provided for the practicum implementation. Because of their

interest, they pushed the students to work hard in completing as many computers stations as possible.

In Group A both school #1 and school #2 did an outstanding job of meeting the first objective using the computer technology activities. School #2, Table 2 showed outstanding performance with 11 students initiating computer activities in five career areas.

Group B school #1 all 15 students met the objective by working at least four computer activities. School #2, Table 2 indicated 10 students met the first specific objective.

Although the summer student enrollment in Group C school #1 was 14, all of the students met or surpassed the first specific objective. School #2 showed all 15 students accomplishing the first objective but none of the students went beyond the anticipated outcome.

Table 3, summarizes the results of the Fall Session participation in computer related activities as records on student time cards.

Table 3

Computer Activities Initiated Time Card Tabulations

FALL SESSION			
Schools Group A	Total Enrollment	Students Participating	# of Stations Initiated per Student
#1	15	13 2	6 5
#2	15	14 1	6 4
Group B			
#1	15	15	6
#2	15	15	6
Group C			
#1	15	12 2 1	4 5 3
#2	15	9 4 2	6 5 4

When classes resumed in the Fall Session it found teachers, aides, and students eager to participate in the practicum implementation. As the writer checked on the progress of the implementation, it should be noted that

despite excessive time spent in drill and preparation for the Stanford Achievement Test, students in each group were successful in meeting the target objective of working on a minimum of four computer related activities.

The second specific objective "over a period of nine months 10 students out of 15 in each of six laboratories will complete the correlated activities as recorded for four careers using appropriate computer technology", was met as indicated on the computer activity checklist (Appendix E).

Table 4, summarizes the combined results of the three sessions in completing the computer related activities as recorded on the Computer Activity Checklist.

Table 4

Completed Computer Activities Checklist Tabulations

SPRING, SUMMER, AND FALL SESSIONS			
Schools Group A	Total Enrollment	Students Participating	# of Computer Activities Completed
#1	45	23	6
		14	5
		8	4
#2	45	30	6
		11	5
		4	4
Group B			
#1	45	37	6
		3	5
		5	4
#2	45	29	6
		3	5
		10	4
		3	3
Group C			
#1	44	12	6
		11	5
		20	4
		1	3
#2	45	24	6
		4	5
		17	4

Only four students during the short six weeks Summer Session neglected to complete the desired number of four computer jobs. Copies of printouts were kept on file for each student. Samples of these computer printouts are located in Appendix K.

The third specific objective "over a period of nine months 10 students out of 15 in each of six laboratories will successfully identify computer jobs with computers as identified on a survey", was successfully accomplished in the Spring, Summer, and Fall Sessions.

Prior to beginning the computer hands-on activities the students in each of the six schools and in each of the three Session took a pre-test to indicate their knowledge of computer technology. Upon completion of the computer related activities, the survey was given as a post-test to measure student growth in understanding computers in the world of work. Overall, comparing the student responses of correct answers on the pre-test, contrasted with the number of correct responses given on the post test was extremely gratifying.

It is evident that the practical application of computer job oriented tasks bring to life the value and importance of computer technology in the world today, for career laboratory student. The results of the pre-post tests reflected growth in understanding computer usage beyond all expectations.

Table 5, summarizes the number of correct responses given by students on the six questions listed on the Survey Identifying Jobs and Computer Processes.

Table 5
Survey Results on Pretest and Posttest

SPRING SESSION					
Schools Group A					
#1			#2		
Corrected Responses	Pretest	Posttest	Pretest	Posttest	
6		12		15	
5		3			
4			9		
3	4				
2	3		5		
1	2		1		
0	6				
number of students			number of students		

Schools Group B					
#1			#2		
Correct Responses	Pretest	Posttest	Pretest	Posttest	
6		13			14
5	2	2			
4	10		4		
3	2		3	1	
2			3		
1			5		
0	1				
number of students			number of students		

(table continues)

Schools Group C				
#1			#2	
Correct Responses	Pretest	Posttest	Pretest	Posttest
6				
5		10		15
4	7	4		
3		1	7	
2	5		4	
1	3		4	
0				
number of students			number of students	

Students in the Spring Session in each school of Groups A, B, and C met and surpassed all expectations anticipated in the third objective. The results of the survey demonstrated the students had developed a clear understanding of computer processes used in various types of work.

Table 6, summarizes the number of **correct** responses given by students on the six questions listed on the Survey Identifying Jobs and Computer Processes.

Table 6

Survey Results on Pretest and Posttest

SUMMER SESSION				
Schools Group A				
#1		#2		
Correct Responses	Pretest	Posttest	Pretest	Posttest
6		1		
5		10		10
4		4		5
3			4	
2	9		5	
1	3			
0	2		6	
	number of students		number of students	

Schools Group B				
#1		#2		
Correct Responses	Pretest	Posttest	Pretest	Posttest
6		7		11
5	5		9	
4		3	4	
3	7		2	4
2		1		
1				
0	3			
	number of students		number of students	

(table continues)

Schools Group C

#1			#2	
Correct Responses	Pretest	Posttest	Pretest	Posttest
6				13
5		10		
4		4		2
3				
2	9		5	
1	1		8	
0	4		2	
	number of students		number of students	

Table 7, summarizes the number of correct responses given by students on the six questions listed on the Survey Identifying Jobs and Computer Processes.

Table 7

Survey Results on Pretest and Posttest

FALL SESSION					
Schools Group A					
#1			#2		
Correct Responses	Pretest	Posttest	Pretest	Posttest	
6		6			
5		4			8
4					6
3	4		7		
2	8	3	4		
1	3	2			
0			4		
number of students			number of students		

Schools Group B					
#1			#2		
Correct Responses	Pretest	Posttest	Pretest	Posttest	
6		11			
5	4	3			7
4	7	1			6
3			2		2
2	1		5		
1	3		4		
0			4		
number of students			number of students		

(table continues)

Schools Group C

#1			#2		
Correct Responses	Pretest	Posttest	Pretest	Posttest	
6		10		9	
5		4		2	
4		1	3	4	
3	4		2		
2	3		6		
1	5		2		
0	3		2		
	number of students		number of students		

It was interesting to note the improvements and gains made by the students in computer processes understanding, as indicated through comparing the results of the pre and post tests. Even though the length of time each student spent on the computer using the job oriented materials was less for students in the Summer Session, their achievements were outstanding. In every instance, both schools in each of Group A, B, and C indicated better awareness of computer processes than before the computer career lab experiences.

When comparing the results of the students in Group A, B, and C in the Fall Session, on the pre and post test, the gains were outstanding on the six item survey. Fifty-one students out of 90 had perfect scores. Only two students in the entire group scored less than half incorrectly. These results varify the success of the third objective.

The fourth objective, "over a period of nine months 10 students out of 15 in each of six laboratories will reflect in a positive manner concerning practical applications

of computers in the world of work", was met by 45 students in each of six laboratories.

Table 8, summarizes the students' responses to the third question listed on the Open-Ended Questionnaire (Appendix G). The question states, "If I could choose any career which uses computers, it would be _____."

Table 8
Open-Ended Questionnaire Responses

Career Choice	Number of Students Selecting each Career
Cashier	84
Fingerprint Technician	72
Teacher	48
Receptionist	29
Secretary	15
Restaurant Manager	11
OTHER CAREERS	10

In the three Sessions a total 269 students gave positive responses to the open-ended questionnaire regarding their attitudes toward computers. One paper from each of the six schools has been included in the practicum report (see Appendix L). The most popular career choice was cashier, followed by fingerprint technician, and then teacher. The career of least interest was that of restaurant manager. Both cashier and teacher activities incorporated the use of a spreadsheet while the activity provided at the imaginary

restaurant utilized the word processor.

Conclusions

The reasons for the success of the practicum are numerous. From the very first contact the writer experienced positive attitudes from each of the six administrators regarding the implementation. When there is support at the top the road to success always becomes less difficult. The enthusiasm of the principals served as a catalyst for the staff in sharing an equal interest.

The introduction of the computer materials and ideas were positively received. Teachers and aides in each of the six schools were eager to have the students experience using the computer in a more practical way as related to real work situations. Because of the high motivation provided through the use of the practicum materials, both students and teachers were anxious to make time available to complete as many activities as possible. Just as stated by Adams (1988) students need to experience using computers in a practical way. He stressed the importance of students recognizing the practical use of a database, spreadsheet, and the word processor. These computer processes were the focus of computer activities throughout the practicum implementation.

Children, when placed in a non-threatening situation, enjoy giving honest opinions. The writer was particularly

interested in student reactions to using the materials provided through the practicum process. The open-ended questionnaire afforded this opportunity. Not only did the questionnaire provide an opportunity for free expression on the part of the students concerning computers, but it also provided unbiased information for the teachers, aides, and writer concerning the impact made by the experience of using the computer technology activities designed for the practicum. After reviewing the comments on the questionnaire, the conclusion was one of positive feedback.

When students worked with the spreadsheet, they proved the viewpoint expressed by Dickinson (1985) to be true. He stipulated there is enthusiasm on the part of the student to engage in the complicated world of work business operations when exposed to the fascinating experience of using a spreadsheet. It was evident the activities planned for the students incorporating the use of the spreadsheet were extremely well received. Many students spoke about planning their own programs concerning finance using the spreadsheet.

When laboratory students worked on the computer as a secretary, at the word processor, there seemed to be a sincere appreciation for the computer activity. Mistakes were easily corrected and the student readily appreciated the way errors could be remedied without rewriting the entire activity. Boudrot (1983) believes writing skills can dramatically improve through becoming proficient in

the use of the word processor.

The process of selecting appropriate computer programs for the purpose of demonstrating to the student the practical applications of computers in the world of work was crucial to the success of the practicum. Many programs which were reviewed although interesting were entirely too complicated for the type of presentation introduced in this practicum. Only through careful investigation of programs and scrutinizing the workability and appropriateness of each, could this practicum realize the success indicated through the evaluation instruments. It is hoped that the practicum accomplished the aims of Vargas (1986) to stimulate actions which further student involvement and to offer experiences which are tied to realistic work situations.

Enthusiastic students eager to learn more about computers were observed by the writer. Positive attitudes coupled with a desire to become involved with additional activities and even more complicated activities was also observed.

In conclusion, this practicum project proved that students are capable of using computers in real life situations. It further proved the motivation for using computers need not focus on games or drill type of activities. Students enjoy feeling their energies are productive and related to the practical side of life. Once the mechanical operation of using computers has been taught, it is time to move the student forward to experience its practical application

in the world of work!

Recommendation

The writer had four specific recommendations based on the results of this practicum. First, the amount of time spent in computer academic drill should be replaced with productive real life computer activities. Second, the Department of Career Education should be involved in the selection of computer software to be used at the elementary level so that career oriented materials will become a major part of the computer materials provided for all students. Third, computer activities which will parallel real job experiences in the world of work, such as those presented in this practicum, should be written to correlate with all career laboratory stations. Fourth, students should be challenged to write some of their own computer programs to illustrate the versatility of the computer and to stimulate their critical and creative thinking. Creativity can be cultivated through proper guidance in the use of the computer.

Dissemination

The results of this practicum project were shared in three ways. The practicum results were shared by the writer during a presentation in Atlanta, Georgia, at an Educational Conference.

Secondly, the writer submitted an article pertaining to the practicum implementation which appeared in the County public Schools Computer News publication December 1989, Volume VII No. 3 (see Appendix M).

Third, the materials used in the practicum will be made available to any schools in the County public Schools desiring to obtain copies, as stipulated in the article.

Finally, the computer activities used in this practicum will be used in all the career awareness laboratories in the county.

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APPENDIX A

LETTER FROM SUPERVISOR
OF COMPUTER EDUCATION

COUNTY PUBLIC SCHOOLS

SCHOOL BOARD ADMINISTRATION BUILDING • NORTHEAST AVENUE •

DR.
SUPERINTENDENT OF SCHOOLS

COUNTY SCHOOL BOARD
DR. CHAIRMAN
VICE CHAIRMAN

FRANK
ASSOCIATE SUPERINTENDENT
BUREAU OF EDUCATION

MR

L.
ASSISTANT SUPERINTENDENT
OFFICE OF STUDENT SUPPORT PROGRAMS

December 16, 1988

Dr. Director
Department of Career Education
County Public Schools
1450 N.E. 2 Avenue, Room 729

Dear Dr. :

As Supervisor of Computer Education and Technology for County Public Schools, I am of the opinion that students would benefit greatly from the experience of working with computers as they are used in the world of work. Students who do not see computers as practical tools do not retain computer literacy skills. This reduces chances for successful achievement of computer literacy objectives assessed in state-mandated competency testing.

The career awareness laboratory could offer an ideal setting for providing such an opportunity.

I look forward to hearing from you regarding this matter.

Sincerely,


Supervisor
Computer Education and Technology
County Public Schools

RO/dm

APPENDIX B

MINIMUM STUDENT PERFORMANCE STANDARDS
FOR A SCHOOL

MINIMUM STUDENT PERFORMANCE STANDARDS
FOR SCHOOLS
1986-87, 1987-88, 1988-89, 1989-90, 1990-91

BEGINNING GRADES 3, 5, 8 AND 11
COMPUTER LITERACY AND SCIENCE

THE FOLLOWING STATE MINIMUM STANDARDS FOR COMPUTER LITERACY AND SCIENCE ARE INCORPORATED BY THIS RULE AS A REQUIRED PART OF THE INSTRUCTIONAL PROGRAM OF THE DADE COUNTY PUBLIC SCHOOLS, EFFECTIVE 1986-87 SCHOOL YEAR.

PREPARATION OF THE STATEWIDE
MINIMUM STUDENT PERFORMANCE STANDARDS FOR

SCHOOLS

Background

The Minimum Student Performance Standards in Schools in Reading, Writing and Mathematics, as adopted in April 1977, are based upon minimal objectives which were developed cooperatively by the Department of Education, state universities and local school districts. An extensive review of these standards began in November 1977, and continued until February 1979. The revisions to the standards prompted by this review are reflected in the document Minimum Student Performance Standards for Schools in Reading, Writing and Mathematics, effective 1985-1990.

More than two thousand basic skills teachers (reading, writing, mathematics) from nearly two hundred elementary, junior high/middle, and senior high schools in were involved in the review of the 1977 standards. Also, representatives of the lay public, the State Reading Council, Council of Teachers of English, the Council of Teachers of Mathematics, and other interested groups provided extensive input regarding changes to the standards. Careful consideration was given to all suggestions for revisions. Additionally, the Department of Education consultants for reading, writing, and mathematics provided invaluable leadership and guidance throughout the revision process.

The revised minimum standards in reading, writing and mathematics were presented to, and approved by, the Division of Public Schools and the Commissioner of Education in 1981. The proposed standards were presented to the State Board of Education and approved for the 1985-86 through 1989-90 school years.

Additional Standards Approved by the State Board of Education

Following the decision by the 1983 Legislature to add computer literacy and science to the required minimum student performance standards, two revisions have been completed since the original writing teams finished the first drafts in the Winter of 1983-84. The proposed standards and skills were reviewed in seven (7) regional meetings attended by district teachers, supervisors and administrators invited from each of the sixty-seven (67) school districts and the university laboratory schools. School and district parent advisory councils were also invited to participate. Special interest groups, such as parent-teacher organizations, school board members, /UNITED, -NEA, and professional teacher and supervisor groups attended meetings arranged for them to review the standards and skills. Over forty (40) district superintendents set up special committees of appropriately-specialized personnel for the final review. Appropriate Department of Education program specialist assisted in the entire process.

A revision to State Board of Education Rule 6A-1.941, which includes by reference these statewide minimum standards in computer literacy and science, has been reviewed and approved by the Division of Public School Rules and Policies Committee, and adopted by the State Board of Education to become effective in the 1986-87 school year.

COMPUTER LITERACY

STANDARDS

B. THE STUDENT WILL UNDERSTAND THE FUNCTION OF THE BASIC PARTS OF A COMPUTER.

BASIC SKILLS - The student will:

9. Identify the purpose of the following devices:
 - a. keyboard
 - b. CRT display (monitor/TV)
 - c. tape/disk units
 - d. printer
10. Identify these functions of a computer system: input, output, storage and processing.
11. Define the function of these parts of a computer system: input device, output device, internal memory and central processing unit.
12. Identify the sequential flow of data through a computer system: from input, through processing to output.
13. Identify one benefit of an external storage device.

GRADE LEVEL(S)

	5		
	5		
		8	
		8	
		8	
3			
	5		
	5		
	5		
	5		

C. THE STUDENT WILL UNDERSTAND THE ROLE AND FUNCTION OF SOFTWARE AND LANGUAGES IN COMPUTER TECHNOLOGY.

14. Identify the fact that a computer requires specific instructions to operate.
15. Identify a computer program as a sequence of instructions used by the computer to perform a task.
16. Identify that computer programs are written in computer languages to solve problems.
17. Identify the fact that software refers to computer programs.
18. Identify the fact that software must be compatible with the equipment to be used.

COMPUTER LITERACY

STANDARDS

C. (continued) THE STUDENT WILL UNDERSTAND THE ROLE AND FUNCTION OF SOFTWARE AND LANGUAGES IN COMPUTER TECHNOLOGY.

D. THE STUDENT WILL RECOGNIZE THE IMPACT OF COMPUTER TECHNOLOGY IN SOCIETY AND THE NEED FOR ITS ETHICAL USE.

BASIC SKILLS - The student will:

19. Identify a variety of media on which software is stored (e.g., hardcopy, disk, tape, ROM cartridge).
20. Identify one function of an operating system.
21. Identify one advantage and one disadvantage of storing software on hardcopy, disks, tape and ROM.
22. Identify an example of a computer application in each of the following areas:
 - a. home;
 - b. school; and
 - c. business.
23. Identify the fact that laws affect the use, access and distribution of electronic information.
24. Identify careers that deal with computer hardware, software and other computer-related areas.
25. Identify three (3) effects that computerization has on our daily lives.
26. Distinguish between legal and illegal duplication and distribution of software.
27. Identify legal ramifications/consequences of computer crime.
28. Provide an example of a computer application in five (5) of the following areas:
 - a. medicine and health care;

GRADE LEVEL(S)

		8	
			11
			11
	5		
	5		
		8	
		8	
		8	
		8	
			11

COMPUTER LITERACY

STANDARDS

F. THE STUDENT WILL UNDERSTAND THE PROCESS OF PROGRAMMING.

BASIC SKILLS - The student will:

GRADE LEVEL(S)

37. Identify the problem to be solved in a given situation.
38. Predict the outcome of a logical sequence of instructions with no decision-making points.
39. Determine a logical sequence for a given set of instructions to solve a problem situation.
40. Predict a possible outcome of a logical sequence of instructions that includes one decision-making point.
41. Find and correct the errors in a simple set of instructions which contains insufficient or extraneous information.
42. Specify steps to a solution given a task that requires a number of steps.
43. Predict a possible outcome of a logical sequence of instructions that includes at least two (2) decision-making points.
44. Arrange in a logical sequence these steps in the process of programming.
 - a. Define and analyze the problem.
 - b. Determine the logical steps required to solve the problem.
 - c. Place the steps in logical sequence.
 - d. Code the steps in the appropriate programming language.

	5		
	5		
		8	
		8	
		8	
			11
			11
			11

APPENDIX C

COMPUTER SOFTWARE LIST FOR
CAREER LABORATORIES

SOFTWARE USED IN THE CAREER AWARENESS LABORATORIES

Survival Math

Electronic Money

Elementary Nutrition

Genetics

Math Shop

Print Shop

Body Transparent

Where in the U.S. is Carmen San Diego?

Fix It

APPENDIX D

EVALUATION TOOL #1

EMPLOYEE TIME CARD

EMPLOYEE TIME CARD

[illegible]

APPENDIX E

EVALUATION TOOL #2
COMPUTER ACTIVITY CHECKLIST

COMPUTER ACTIVITY CHECKLIST

Name _____

Employee Number _____

Write the date when the activity was completed or place an X in the proper column to indicate the activity was not completed.

<u>Station</u>	<u>Date Completed</u>	<u>Not Completed</u>
1. Teacher	_____	_____
2. Grocery Store Manager	_____	_____
3. Police Crime Lab	_____	_____
4. Secretary	_____	_____
5. Receptionist	_____	_____
6. Restaurant Manager	_____	_____

APPENDIX F

EVALUATION TOOL #3

SURVEY IDENTIFYING JOBS AND COMPUTER PROCESS

SURVEY IDENTIFYING JOBS AND COMPUTER PROCESSES

Name _____

Employee Number _____

Select one of the words listed below to complete each sentence.

word processor	spreadsheet	database
----------------	-------------	----------

1. When typing a letter in an office, a secretary would use a _____.
2. Teachers use a _____ to store information about grades and attendance of their students.
3. A store manager would find using a _____ helpful when checking the inventory on the shelves prior to reordering supplies.
4. The police department searches quickly through records of possible suspects to find a criminal by using the _____.
5. The receptionist can easily find out which patients should be notified about their next dental appointment by using the _____.
6. The restaurant owner saves the menu on a data diskette so that he can easily change the menu prices made on a _____.

APPENDIX G

EVALUATION TOOL #4
OPEN-ENDED QUESTIONNAIRE

QUESTIONNAIRE

Name _____

Employee Number _____

Complete the following statements.

1. My favorite computer activity is _____
because _____

2. When I think about computers in the world of work,
I think they are _____

3. If I could choose any career which uses computers, it
would be _____ because _____

4. Someday I hope computers will _____

APPENDIX H

DATABASE ACTIVITY

USING A DATABASE
(Program: Mecc Stuff & Fetch)
Station: Fingerprint Technician
Police File

DATABASE

Station: Fingerprint Technician

Step 1

Load "Stuff and Fetch" program. Follow directions on the screen.

Step 2

Press space bar two times and the main menu will appear.

Step 3

Answer the question by entering #1, Return.

Step 4

Answer the question by entering #1, Return.

Step 5

Answer the question by entering #2 (use a file on a data diskette), Return.

Step 6

Insert data diskette for Fingerprint Technician station. Press space bar.

Step 7

Remove the data diskette and insert Stuff and Fetch. Press space bar.

Step 8

Using the arrow key, move the highlight to Fetch. Press Return.

Step 9

Find the Card which will be highlighted. Press Return.

Step 10

Type Police File and Return.

The Police File will appear on the monitor. It is necessary to print the list of suspects on the printer to complete the fingerprint technician job.

You have been asked to review the Police File to identify possible suspects in a robbery for a police line-up. The witness reported the crime was committed by a person in dark pants and jacket, between 5'7" and 5'10" in height, and weighing approximately 160 to 175 pounds.

Steps 11

Press Control, hold it down, press D. Using the arrow move the highlighter to Print Card.

Step 12

Check to be sure the printer is on and set up correctly. Press Return.

Take your copy of the Police File and circle all the suspect case numbers that fit the description given by the witness.

You have just completed the fingerprint technician task. Take the printout to your employer (teacher) to show the activity has been completed.

APPENDIX I

WORD PROCESSOR ACTIVITY

USING A WORD PROCESSOR
(Program: Mecc Writer)

Station: Waiter/Waitress
Restaurant Manager

WORD PROCESSOR

**Station: Waiter/Waitress
Restaurant Manager**

You were hired as a waiter/waitress, and have been promoted from one position to another until now you have become the restaurant manager. Sometimes it is necessary to make changes in the restaurant menu. The cost of produce (food) has increased and a new menu must be printed.

Today, as the restaurant manager, you will change the prices on the menu. Carefully follow the steps to complete this activity.

Step 1

Load Mecc Writer

Step 2

Read and follow the directions given on the screen until the main menu appears.

Step 3

Select number 1 - Mecc Writer. Press Return.

Step 4

Wait for the screen to clear and the cursor is at the left top of the screen.

Step 5

Remove the Mecc Writer program and place it in its jacket.

Step 6

Insert the data diskette for "First Place Restaurant."

Step 7

Press Control, hold it down, and press letter L at the same time.

Step 8

Press the space bar to continue.

Step 9

File name to load will appear.

Step 10

Answer the question with FIRST PLACE RESTAURANT. Press Return.

Step 11

Press Control, hold it down, and press letter B to get to the beginning of the file.

Step 12

Use the arrows to bring the cursor to the line showing Chicken Fingers.

Step 13

Use the arrow to move the cursor across the screen one space beyond the price \$2.25.

Step 14

Use the Delete key to erase .25. The screen will now show \$2. .

Step 15

Enter the new amount .50 .

Step 16

The price is now changed to \$2.50.

Step 17

Use the arrows to bring the cursor to the line showing potato skins.

Step 18

Use the arrow to move the cursor across the screen one space beyond the price \$2.15.

Step 19

Use the Delete key to erase .15. The screen will show \$2. .

Step 20

Enter the new amount of .35 .

Step 21

Use the down arrow to bring the cursor to the price of the B.B.Q. chicken \$2.50.

Step 22

Change the price from \$2.50 to \$2.75.

Step 23

Use the Delete key to erase .50. The screen will show \$2.

Step 24

Enter the new amount of .75.

Step 25

Use the down arrow to bring the cursor to the price of the Big Burger \$2.75.

Step 26

Change the price from \$2.75 to \$3.00.

Step 27

Use the Delete key to erase 2.75. The screen will look like this \$.

Step 28

Enter the new amount of \$3.00 .

Continue changing the prices for the following items on the menu.

Key Lime Pie	\$1.95 change to \$2.15
Ice Cream Sundae	\$2.25 change to \$2.45
Coke, Diet Coke, Sprite	
Coffee, Iced Tea	\$.75 change to \$.85
Milk	\$.65 change to \$.75

Step 29

Now you are finished with the menu changes. Press Control and hold it down, press P.

Check to be sure the printer has been turned on.

Step 30

The screen will ask - Do you want to print the text? Answer the question yes. Press Y, press Return.

Step 31

Answer the next question with #1. Press Return.

You have just used the word processor to make the menu price changes. Hope you enjoyed the activity.

Take the new menu to your employer (teacher). Complete the information at the top.

APPENDIX J

SPREADSHEET ACTIVITY

USING A SPREADSHEET
(Program: EduCalc)

Station: Teacher
Attendance Records

SPREADSHEET

Station: Teacher

Each grading period, student records need to be updated. This involves making changes in the total number of days absent and tardy. The computer technology used for accomplishing this task is a program called a "spreadsheet." Spreadsheets will automatically adjust (change) the total number of days present for each student, because a formula has been entered into the program.

Today you are the teacher. It is your job to enter the attendance of your students in the computer for this grading period.

Step 1

Load EduCalc Side 1. When the main menu appears on the screen, press 3 (use EduCalc).

Step 2

Remove the disk from the disk drive, turn it over, put it back in the drive, and press Return. Use the space bar to change the command from Enter to Files. Press Return.

Step 3

Load will be highlighted. Press Return.

Step 4

Remove EduCalc and place it in its jacket. Insert file disk (datadiskette) for teacher. Press Return.

Step 5

Type the word Teacher to answer the question. Press Return. The file is loading.

Step 6

Remove the file disk, put EduCalc side two back in the drive and then press ESC.

Step 7

The teacher station worksheet will appear on the screen.

Step 8

Press ESC again. Use the space bar to change the command to Enter. Enter will be highlighted. Press Return.

Step 9

Use the space bar to change the command from Text to Number. Number will be highlighted.

The spreadsheet is arranged in rows and columns.

In the upper left corner A1 appears. This means the Cell for A1 is highlighted.

When the arrows appear on the screen in the upper right corner, the Cell highlight can be moved.

Step 10

Use the arrows and move the Cell highlight until C14 appears in the top left corner. This will highlight Days Absent for student Bill. Press Return.

Step 11

The screen shows the days absent for Bill are 0. You need to change this number.

Step 12

Type in number 2. Press Return. Notice the days absent have changed to 2, and the days present have changed to 43.

The arrows have reappeared in the top right corner on the screen.

Step 13

Use the arrows to highlight Cell D14 (days tardy). Press Return.

Step 14

Type in number 1. Press Return. Notice the days tardy have changed to 1 and the days present remain 43.

The arrows are back on the screen in the top right corner.

Step 15

Use the arrows and move the Cell highlight to C16. This will highlight days absent for student Joe. Press Return.

Step 16

The screen shows the days absent for Joe are 5. You need to change the number.

Step 17

Type in number 6. Press Return. Notice the days absent have changed to 6 and the days present have changed to 39.

The arrows have reappeared in the top right corner on the screen.

Step 18

Use the arrow to highlight Cell D16 (days tardy). Press Return.

Step 19

Type in number 0. Press Return. Notice the days tardy have changed to 0 and the days present remain 39.

The arrows are back on the screen in the top right corner.

Step 20

Use the arrows and move the Cell highlight to C18. This will highlight days absent for student Maria. Press Return.

Step 21

The screen shows the days absent for Maria are 3. You need to change this number.

Step 22

Type in number 4. Press Return. Notice the days absent have changed to 4 and the days present have changed to 41.

The arrows have reappeared in the top right corner on the screen.

Step 23

Use the arrow to highlight Cell D18 (days tardy). Press Return.

Step 24

Type in the number 0. Press Return. Notice the days tardy have changed to 0 and the days present remain 41.

Step 25

Continue following the same steps to change the days absent and days tardy for the rest of the students listed below. Begin with student Joy.

<u>Student</u>	<u>Days Absent</u>	<u>Days Tardy</u>
Joy	3	2
Sue	4	0
Patsy	1	3
Joan	0	0
Carol	2	1
Jack	4	1
John	8	3
Judy	2	0
Jose	0	0
Jason	5	3
Tom	2	0
Tina	2	0

Step 26

When this has been completed, press ESC. This will highlight the Enter command.

Step 27

Use the space bar to highlight Files. Press Return.

Step 28

Load will be highlighted. Use the space bar to highlight Print. Press Return.

Step 29

Check to be sure the printer is turned on and the paper is loaded. Press Return to print.

Step 30

The new updated spreadsheet will be printed.

Step 31

Write your name and employee number on the spreadsheet.
Give the spreadsheet to your employer (teacher).

Step 32

Remove the EduCalc program and place it in its jacket.
Power down the computer.

APPENDIX K

COMPUTER PRINTOUTS

Name _____

Employee Number _____

FIRST PLACE RESTAURANT

Appetizers

Chicken Fingers: With honey mustard & spicy barbecue sauce.	\$2.50
Potato Skins: Filled with real bacon and cheddar cheese.	\$2.35

The Chef's Specials

B.B.Q. Chicken Leg & Thigh Lightly breaded with honey mustard sauce.	\$2.75
Big Burger Charbroiled with tomato and lettuce.	\$3.00

Delicious Dessert

Key Lime Pie Smooth cream bursting with cool lime flavor.	\$2.15
Ice Cream Sundae Choice of fruit or chocolate topping. Outrageously creamy and delicious.	\$2.45

Beverages

Coke, Diet Coke, Sprite	\$.85
Coffee, Iced Tea	\$.75
Milk	

Banquet Facilities Available

Gratuity Not Included

Name _____

Employee Number _____

Receptionist -- Dr. Roger Smith

Names	Last Appointment
Mrs. Allan Shaw 6529 S. W. 80 St. Miami, FL 33143	July 10
Ms. June Gold 1035 S. W. 120 Rd. Miami, FL 33156	April 20
Mr. Bill Wright 2609 S. W. 30 Ave. Miami, FL 33132	June 28
Ms. Jane Smith 7504 S. W. 16 Ave. Miami, FL 33014	January 26
Mr. Clarence Daniels 3125 S. W. 176 St. Miami, FL 33034	February 28
Mrs. Richard Williams 1801 S. W. 10 Ave. Miami, FL 33132	July 9
Mr. Charles Lane 6425 Lakeway East Miami, FL 33014	August 13
Mr. Jim White 2965 S. W. 17 St. Miami, FL 33125	September 6

Name _____

Employee Number _____

Fingerprint Technician -- Police File

Suspect List:

Case Number	Previous Record	Hair Color	Age	Height	Weight	Sex
7068	Store Theft	Brown	30	5' 10"	175	M
7281	Auto Theft	Brown	38	5' 9"	168	M
7158	Purse Snatcher	Brown	25	5' 5"	138	F
7529	Drug Dealer	Blonde	24	5' 7"	160	F
7661	Mugger	Red	31	5' 8"	163	M
7903	Forger	Bald	25	4' 11"	150	M
7006	Bank Robber	Black	32	5' 9"	159	M
7553	Drug Dealer	Brown	27	5' 8"	145	F
7712	Auto Theft	Blonde	41	6' 1"	142	M
7420	Purse Snatcher	Black	35	5' 6"	142	M
7068	Burgler	Brown	29	6' 0"	183	M

APPENDIX L

STUDENT RESPONSES TO
OPEN-ENDED QUESTIONNAIRE

QUESTIONNAIRE

Name _____

Employee Number _____

Complete the following statements.

1. My favorite computer activity is secretary
because it's fun typing a letter.
2. When I think about computers in the world of work, I
think they are great and you learn a lot.
3. If I could choose any career which uses computers, it
would be secretary because it's fun and
you can learn a lot about secretary skills
4. Someday I hope computers will be all over the world
so people can learn more about computers

QUESTIONNAIRE

Name _____

Employee Number _____

02-13-70

Complete the following statements.

1. My favorite computer activity is cashier
because I like to change
the prices.
2. When I think about computers in the world of work, I
think they are Great to learn
new skills
3. If I could choose any career which uses computers, it
would be cashier because I think it
is fun to be in a store
and get all the prices.
4. Someday I hope computers will make our
life time easier.

QUESTIONNAIRE

Name _____

Employee Number _____

Complete the following statements.

1. My favorite computer activity is police crime lab
because I would like to catch people that
deal in drugs.
2. When I think about computers in the world of work,
I think they are smart because they do a lot
of work for you that would normally take a long time
3. If I could choose any career which uses computers, it
would be Teacher because it could be fun,
you could teach with computers, it's such a
fun way to learn.
4. Someday I hope computers will be better than
they are today.

QUESTIONNAIRE

Name _____

Employee Number 711

Complete the following statements.

1. My favorite computer activity is Restaurant Manager
because you are able to create and make very attractive foods to eat and set your own prices
2. When I think about computers in the world of work,
I think they are important and really needed
they are our future the working World of work.
3. If I could choose any career which uses computers, it
would be Police Crime Lab because you will
be able to capture the the bad people
in the World, those who hurt, and steal from
other
4. Someday I hope computers will enable me to live
on one planet and work on another

QUESTIONNAIRE

Name _____

Employee Number _____

4-30-77

Complete the following statements.

1. My favorite computer activity is Receptionist
because I enjoy having to learn
about what a real receptionist is.
2. When I think about computers in the world of work, I
think they are Very helpful and they help us
with our paper work and our Homework.
3. If I could choose any career which uses computers, it
would be Computechician because I get to
work with computers and I have
fun fixing computers.
4. Someday I hope computers will be able to talk
and be able to work independently.

QUESTIONNAIRE

Name James M. Smith
Employee Number 9448640

Complete the following statements.

1. My favorite computer activity is Teaches
because I think teaching children is
a very exciting job it makes them want to learn
2. When I think about computers in the world of work,
I think they are educational and they
give correct information if you need it fast
3. If I could choose any career which uses computers, it
would be secretary because secretaries
have to be very serious about their
work and also to keep track of all the people in the
work place.
4. Someday I hope computers will be more educational
than they are now. I would like
them to talk to you, to be a
companion.

APPENDIX M

COMPUTER NEWS

APPENDIX M

COMPUTER NEWS

Students apply computers in the "World of Work"

by Joan Pereno, Career Awareness Laboratory Programs

"More than anything else, I want to operate a computer in the police station."

"I never realized they had to keep track of all these things to run a store."

These were responses of fifth-grade students to Project COMET (Career Opportunities Motivated through Educational Technology) after using the new computer activities that relate to career stations in a COMET lab.

The importance of computers and their practical application is a major focus of Project COMET, a dropout program for students-at-risk. COMET laboratories simulate the "World of Work," where students experience actual careers. At each career station, students participate in hands-on activities followed by computer activities that introduce them to computers as used in a "real job situation."

In March 1989, COMET labs at six elementary schools began implementing the computer activities correlated to hands-on experiences. In the labs, the students become familiar with a database, a word processor, and a spreadsheet. The following is a brief description of the six career laboratory activities and the computer-related experiences.

Teacher

Phase I Most students enjoy projecting themselves into the career of a teacher in the lab setting. The student functioning as a teacher makes a lesson plan, teaches a lesson, gives a test, checks papers, and



Photo by

Elementary School match information from an eye witness to a crime with information in a database. records grades in the "make believe" record book.

Phase II The computer activity requires the student teacher to enter on a spreadsheet the days absent and days tardy of students in an imaginary class for a grading period. The COMET students are impressed to see the total number of days present and days tardy automatically change.

Cashier

Phase I Through operating the cash register in the lab grocery store, the student learns how to use the equipment, deal pleasantly with customers, and make correct change.

Phase II The computer-related activity teaches the student how to use a spreadsheet to change the stock inventory and make a printout of the number of items to be ordered.

Fingerprint Technician

Phase I The student working as a fingerprint technician learns how to take fingerprints and how prints are used in the identification of a criminal.

Phase II The student moves to a computer and selects persons for a police line-up by matching the information reported from an eye witness to a crime with information found in the database.

(Continued on page 2)

Learning about computers gives recertification credits

Help in using computers and credit toward recertification are available in the computer education courses offered by local universities. Some of them are given here. Contact the universities for more information.

University

To increase the computer capabilities of all teachers, University has redesigned its masters and educational specialist degree programs, providing two generic computer courses that have been approved by the Florida Department of Education as infield courses for renewal of teaching certificates in any field.

Computer Literacy is offered on five Saturdays at four different times during the year at Riviera Middle School or Sunset Senior High School. **Computer Education** is offered in a two-week evening format during late June each year. Both courses are required for all GEM majors.

The three-credit courses cost \$555 each. Call 940-6447, extension 7440, or contact either of the Dade GEM Site Administrators, Dr. Fran Winfrey, 944-0519, evenings, or Dr. John McKinney, 385-4255, after 2 p.m., for exact dates, locations, and registration information.

At the doctoral level, students in the new Child and Youth Studies doctoral program

in School Management and Instructional Leadership, receive a heavy dose of technology. Many of these students can communicate online. In the Center for Computer and Information Science, masters and doctoral programs for educators and trainers are delivered around the world through telecommunications using the students' home computers and modems.

Barry University

Barry University is offering four courses in its winter intensive cycle. **Introduction to Computer Education**, **Teaching Software Applications**, **Educational Computer Hardware**, and **Computer Applications in Elementary Education** will each be taught 9 a.m. to 2 p.m., Dec. 18-22 and Dec. 26-29.

Barry's next regular cycle of courses will be Feb. 5 - April 7. Courses are taught at the main campus, 11300 N.E. 2nd Ave., and at Cutler Ridge Middle School, Village Green Elementary School, Plantation Middle School, and Boyd Anderson High School.

The three-credit courses cost \$405 each. Contact the School of Computer Science at 899-3600.

University of Miami

The University of Miami is offering two sections of **Microcomputer Applications**

in Education. These will be on Monday or Wednesday evening, 5:00 p.m.-7:40 p.m., Jan. 16 - May 10, 1990.

The three-credit course costs \$717 - \$478 per credit less 50% for teachers. For more information, call Dr. Arlene Brett, 284-2529. Dr. Brett is a member of the DCPS Computer Education Advisory Panel.

Miami-Dade Community College — South

A number of sessions of **Introduction to Micro Usage** will be offered by Miami-Dade Community College — South, beginning in early January and ending in late April. Each session meets for two hours on two late afternoons each week or two evenings each week or on Saturday mornings for four hours. The course, acceptable for certificate renewal, introduces information processing, microcomputer operation, and the use of PC/MS-DOS (the IBM/compatible operating system). Applications in word processing (WordPerfect), integrated electronic spreadsheets (VP-Planner/Lotus 1-2-3), and electronic databases (dBASE III Plus) are the main topics.

This four-credit course costs \$102.40 plus a \$15 laboratory fee. The textbook and materials will cost approximately \$45. Call 347-2080 for an application.

Project COMET labs relate computers to careers

(Continued from page 1)

Receptionist

Phase I The student writes telephone messages correctly and completes a form for ordering office supplies.

Phase II The student moves to the computer and is employed as a receptionist in the office for two dentists. The job responsibility requires notifying patients about their six-month checkup. Through the use of a database, dates of the last visit are verified and patients are contacted through the mail for their next appointment.

Secretary

Phase I The student, introduced to the skill of writing shorthand, practices many symbols and concludes the station activity by writing a brief message as an office stenographer.

Phase II Learning how to use a word pro-

cessor to produce a business letter for an imaginary boss is the culminating activity for the laboratory secretary.

Waiter/Waitress

Phase I It is the responsibility of the student as waiter or waitress in the lab restaurant to set a table, take orders, total the check, and provide polite, efficient service to student customers.

Phase II The student uses a word processor to change the prices on a restaurant menu. When the adjustments are made, a new menu is printed.

Implementation

Sue Georgini, Career Awareness Laboratory teacher at South Miami Elementary School, served as technical advisor for the computer activities described here. The word processor, database, and spreadsheet used are **MECC Writer**, **MECC Stuff and Fetch**, and **EduCalc**. Each CO-

The Florida Department of Education has recognized Project COMET as one of eighteen exemplary drop out prevention programs in the state.

MET lab received these products, disks with files and/or templates that we prepared for each occupation, and step-by-step directions for booting the tool computer programs and using the files. With these materials, our teachers and students, many of whom were inexperienced in using computers, are able to implement the activities. This is true even though the spreadsheet, database, and word processor used are designed for older students.

Activities for 10 additional stations will be available in the near future.

Information

For more information, call me, Joan Pereno, at 305-995-1772.

(Continued on page 7)